

ABSTRACT

A self-supporting roof lighting system that accepts low elevation light and rejects high elevation light may be produced by making arrays of parallel laser cuts through, or partly through, a flat sheet of transparent acrylic, cutting the segment containing the arrays from the sheet, positioning the segment over linear heating elements to soften the acrylic along the lines between adjoining laser cut arrays, folding the segment along the softened lines through the angle necessary to form a multi-faceted structure of saddle, pyramid or higher order form and allowing this structure to cool and solidify to produce a self-supporting angle-selective roof lighting system with an array of light redirecting laser cuts on each facet. The sequence of the method may be changed so that a saddle, pyramid or higher order structure is first formed by folding or moulding transparent acrylic and, subsequently, an array of parallel laser cuts is made in each facet of the structure to produce an angle-selective roof lighting system. A conical angle-selective roof lighting system may be produced by making concentric laser cuts through, or partly through, a disc of transparent acrylic with a segment cut out, softening the laser cut disc and moulding the disc into conical form.